



OFFICE OF

CHIEF ADMINISTRATIVE OFFICER

ROGER BOAS
CHIEF ADMINISTRATIVE OFFICER



289 CITY HALL
SAN FRANCISCO
CALIFORNIA 94102
415/558-4851

November 20, 1985

The Honorable Dianne Feinstein
Mayor of San Francisco
Room 200, City Hall
San Francisco, California 94102

The Honorable Board of Supervisors
Room 235, City Hall
San Francisco, California 94102

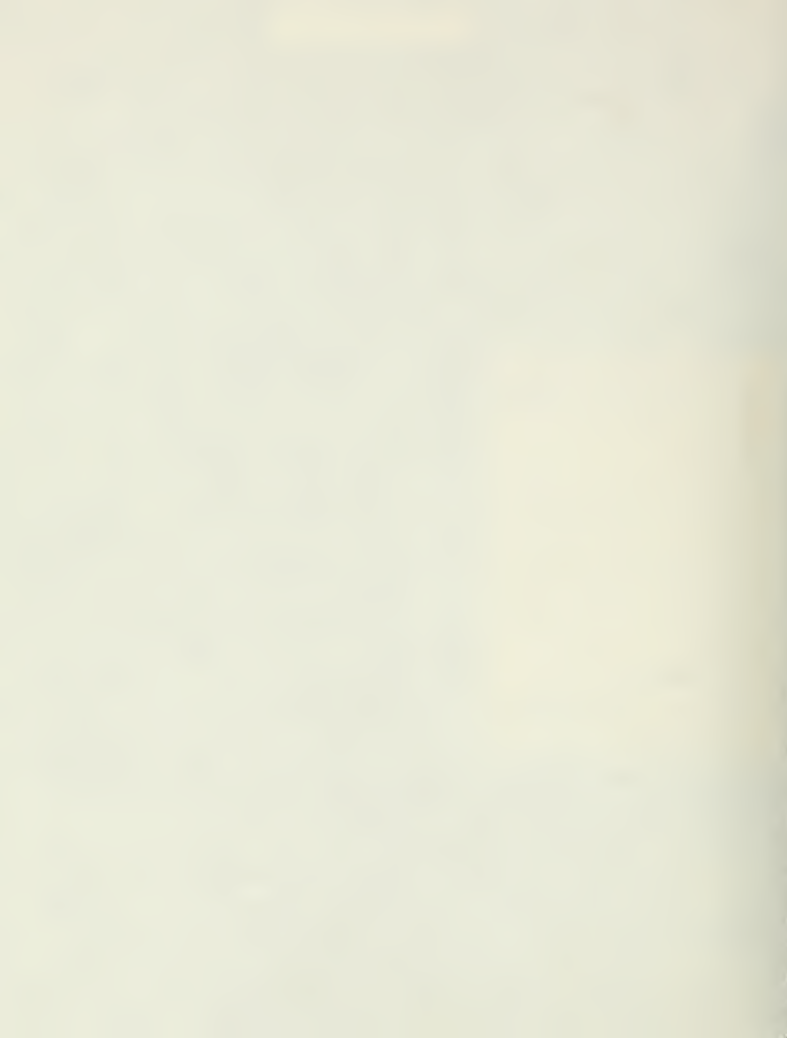
Re: Review of the City's Infrastructure

Dear Madame Mayor and Members of the Board:

The Capital Improvement Advisory Committee (CIAC) has completed a review of the capital assets - the infrastructure - of the City of San Francisco.

Purpose

Our purpose was two-fold: to provide you with information regarding the condition of the infrastructure, and to recommend, for your consideration, a long-range maintenance program and the financing methods to pay for it. Specifically, we have sought to determine the current replacement value of the infrastructure and the extent of deterioration existing in it, and to assess the adequacy of our present maintenance efforts by comparing what we have been spending to what is actually needed.



The review took eight months and involved many people. Our detailed findings and recommendations are in the attached report. A brief summary is contained in this letter.

Accuracy of the Information Presented

Most of the information in this report comes from estimates, and is less accurate than if it came from engineering valuations. Although any individual estimate is subject to question, the overall picture that is presented is, we believe, a true one.

City Investment in Past Infrastructure Maintenance

Although we found serious infrastructure problems, undoubtedly they would have been much worse if the City had not spent heavily on maintenance in recent years.

During the six year period 1978-79 to 1983-84, the City invested \$930 million (1985 dollars) in infrastructure maintenance - an average of \$155 million per year - the highest in the City's history.

The reason that the infrastructure problems persist, in spite of this large expenditure, is because the City is old (140 years) and its capital assets have become increasingly costly to maintain.

The Need for a Broad Review

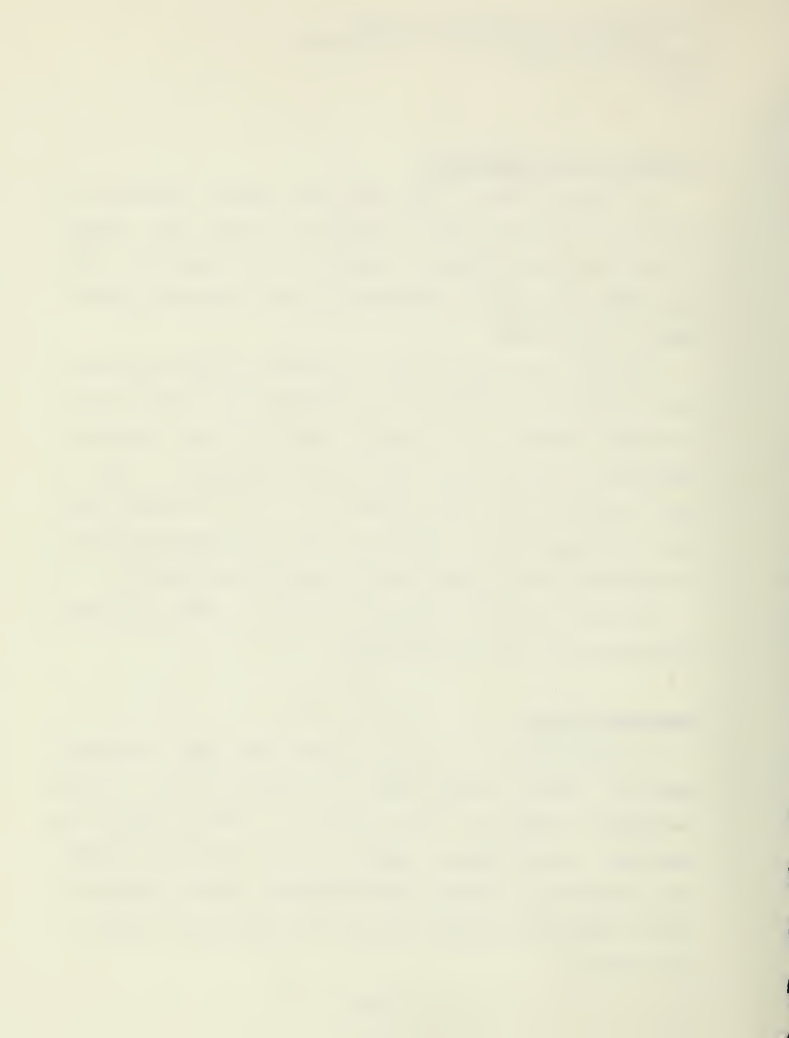
In recent years, the CIAC has focused primarily on assessing individual capital projects, in large part because of the constraints imposed by Proposition 13, passed six years ago. Early this year, we decided that this piecemeal approach needed to be expanded.

We felt that there has been increasing visible deterioration of portions of the City's infrastructure. Our financial environment appears to be changing significantly. The budget surpluses of recent years seem likely to disappear. There is also the possibility that Proposition 13 will be amended next June to provide easier access to funds for capital projects. We also had concerns about seismic and asbestos problems.

For all of these reasons, we decided to make this broad review of the City's infrastructure.

Replacement Value

We found that the infrastructure has eleven different types of capital assets with an estimated total current replacement value of \$15.4 billion. These assets are buildings, piers, pipes, parks, sewers, streets, bridges, dams, reservoirs, runways, and equipment. (School facilities and the Community College District have not been included in this review.)



Impairment

We determined that there is considerable impairment of the infrastructure, which we estimate amounts to at least \$1.162 billion. The primary problem is deterioration but there are additional problems that relate to safety, health, and working efficiency. This impairment affects the well-being of San Franciscans, the quality of City services, and the productivity of City employees.

Deterioration

We estimate that infrastructure deterioration is at least \$914.3 million (of the total \$1.162 billion). (By deterioration we mean the wear and tear and structural fatigue which decreases the ability of an asset to perform its intended function.) This deterioration has been caused by four factors: age; many years of deferred maintenance; recent double digit inflation; and, since 1978, Proposition 13. Unless the deterioration is removed, it will become more severe and eventually unmanageable.



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Other Impairment Problems

The City's infrastructure is also impaired by other problems which we estimate will cost \$248.0 million (of the total \$1.162 billion) to repair. These are seismic vulnerability, asbestos exposure, certain problems related to fire safety, and inadequate working conditions in various office buildings and shops.

Financing Methods

The City needs to spend \$1.162 billion to correct the existing impairment. We have reviewed the question of how to finance this large amount of work, being aware that the City's revenues are shrinking and that the City faces future fiscal uncertainty. Our goal was to find financing mechanisms that fit logically with the work that needs to be done, and that do not affect the present revenue stream but rather provide additional sources of revenue.

We therefore recommend three financing programs for your consideration, as follows:

1. **General Obligation bonds for resolving safety and health matters in departments without access to user fees - provided Proposition 13 is amended in the June 1986 election (\$327 million):**

Based on an increase in the property tax, this is the least expensive financing method available; it requires a two-thirds vote. Included are repairs relating to seismic and asbestos exposures, fire safety code problems and high pressure fire main deterioration. It would cost the average homeowner \$52 a year initially, plus \$24 more starting in year 6, and \$7 more starting in year 11. (If Proposition 13 fails to be amended next June, we would then recommend increasing the sales tax and using sales tax revenue bonds as an alternative.)

2. **Sales Tax and Business Tax increases - in equal amounts - for other repairs in departments without access to user fees - (\$418 million):**

We recommend that both tax increases be dedicated solely to infrastructure repairs; this requires a two-thirds vote in each case. Included are repairs to streets, buildings, parks, and equipment; improvement of working conditions. It would raise the sales tax from 6.50 cents to 6.75 cents and the business tax by 13.3%.

3. **User Fee increases for departments that can impose them - (\$417 million):**

The fees that would be increased are the Port Maritime and Rental Fees, the Water Charge, and the Sewer Service Charge. Included are repairs to piers, pipes, and sewers. It would raise the average water bill \$1.62 bimonthly in years 1, 7, and 13, and the average sewer service charge \$0.61 bimonthly in years 1, 6, and 11.

Priorities

Priorities are essential because there is much work to do and funds are scarce. We feel that urgent projects, such as those connected with safety and health (e.g., asbestos removal), or with the repair of a heavily deteriorated asset (e.g., San Bruno jail) should be given high priority and repaired first. Less urgent work can be scheduled for as long as 18 years in order to keep the annual financial requirements manageable. We recommend a construction program that begins now and ends after the turn of the century.

Annual Maintenance Needed

As we mentioned earlier, the city has been spending heavily on maintenance in recent years - an average of \$155 million per year - for the period 1978-79 to 1983-84.

Nevertheless, we appear to be falling behind. We have found that the City needs to spend an estimated \$205 million per year on maintenance in order to keep up with normal wear and tear. This is \$50 million a year more than we have been spending.

The problem is that we have \$15.4 billion worth of assets, many of which are old. The older an asset becomes, the costlier it is to maintain.

In 1987 the City will receive from the CAMS Program (Capital Assets Management Systems) an engineering valuation of the exact amount of annual maintenance needed. We recommend continuing our existing level of maintenance until then and increasing it upon receipt of the valuation.

Conclusion

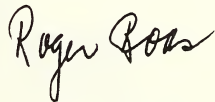
There is impairment in the infrastructure of every city and ours is no exception.

There is extensive impairment in San Francisco's infrastructure. We have therefore recommended an 18-year long maintenance program, based on the establishment of sensible priorities, to deal with it. We have also suggested financing methods to pay for this program. These financing methods do not reduce existing revenues but instead produce additional ones.

We also found that we are not spending enough to keep up with normal wear and tear, even though our rate of expenditure is at an historic high. We therefore recommend that the spending rate be increased when an engineering valuation is received in 1987.

We believe that the adoption of a long term program that both eliminates the existing impairment and keeps up with normal deterioration will add to the well being of our citizens, improve the quality of City services and the productivity of City employees, and put the City in the strongest possible position to face the new century.

Very truly yours,

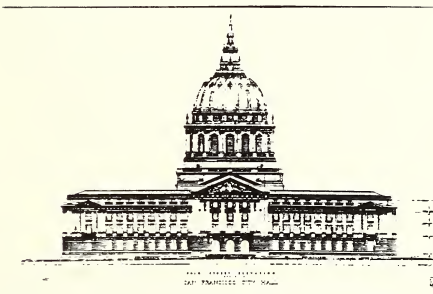
A handwritten signature in black ink, reading "Roger Boas". The signature is written in a cursive, flowing style with a large initial "R".

Roger Boas
Chief Administrative Officer
Chairperson, Capital Improvement
Advisory Committee

Attachment

A STUDY
OF THE
INFRASTRUCTURE
OF THE
CITY AND COUNTY OF SAN FRANCISCO

NOVEMBER 20, 1985



BY THE

CAPITAL IMPROVEMENT ADVISORY COMMITTEE



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INTRODUCTION AND OBJECTIVES

The Capital Improvement Advisory Committee (CIAC) is defined by Sections 3.05-3.010 of the San Francisco Administrative Code. The Committee was established in order to determine and recommend to the Mayor and Board "priority and financing programs for all capital improvement projects, reconstruction or replacement items, and maintenance and repair items which are proposed for inclusion in the budget for each fiscal year." (Section 3.05) The CIAC consists of the Chief Administrative Officer (chairperson), Controller, Director of Public Works, Director of Planning, General Manager of Public Utilities, and General Manager of Recreation and Parks.

In recent years, the CIAC has focused primarily on the assessment of individual capital projects to ensure that only those with the highest priority were included in the City's budget. Serious budgetary constraints have existed during the past decade, in part because of the passage of Proposition 13 and the effects of double digit inflation. Many important projects have had to be deferred because funding was not available, even though total infrastructure spending has increased very significantly in recent years.

The CIAC has become increasingly concerned about the results of this piecemeal approach to capital budgeting and the increasing visible deterioration of portions of the City's infrastructure. It also recognizes that the financial environment may be undergoing significant change. The budget surpluses of recent years seem likely to disappear. There is also the possibility that Proposition 13 will be amended to provide easier access to funds for capital projects. Important infrastructure decisions will undoubtedly be necessary during the next few years.

Accordingly, the CIAC decided to undertake a broad assessment of the City's infrastructure in order to define the magnitude and nature of the problem. Specific objectives were to determine the current replacement value of the infrastructure, estimate the extent of existing impairment, recommend financing methods and priorities, and assess the adequacy of the present maintenance efforts.

APPROACH

Very little exact information exists regarding the replacement value of the City's infrastructure, the extent and nature of the deterioration, and the cost of repairing it. The City's Capital Asset Management System (CAMS) will be providing exact data but not until late 1987. Based on engineering appraisals, CAMS will show the value of each building, the amount of its deterioration and the amount required each year for its maintenance.

As a point of departure in what turned out to be an eight-month effort, the CIAC utilized the existing data from the CAMS project and the information contained in the 1983 Strategic Plan by the San Francisco Chamber of Commerce.

The CIAC then obtained estimates from general managers and support staff of the City's major departments. A CIAC subcommittee consisting of the Director of Public Works, the City Engineer, the Director of Property, the City Architect, and the Capital Projects Coordinator carefully reviewed these estimates.

In addition, an independent validation of deterioration was made by the engineering divisions of Skidmore, Owings & Merrill, Dinwiddie Construction, Chevron Corporation, DeLeuw Cather & Co., Parsons Engineering, Embarcadero Center, Ltd., and Hellmuth, Obata & Kassabaum.

FINDINGS AND RECOMMENDATIONS

REPLACEMENT VALUE

The CIAC estimates the replacement value of the City's infrastructure to be \$15.4 billion. (School facilities and the Community College District have not been included in this review.) A breakdown by category is shown below. Additional details are shown in Exhibit 1.

| | <u>Replacement Value</u> | |
|--|----------------------------|-------------------------|
| | <u>Dollars in Billions</u> | <u>Percent of Total</u> |
| Buildings and Structures (including piers, parks and runways) | \$ 4.2 | 27.3% |
| Water Pipes | 3.9 | 25.3 |
| Sewers, Sewer Plant and Sewer Equipment | 3.6 | 23.4 |
| Street, Bridges, and Traffic Equipment | 1.8 | 11.7 |
| Dams and Reservoirs | 1.1 | 7.1 |
| Equipment | <u>0.8</u> | <u>5.2</u> |
| Total | <u>\$15.4</u> | <u>100.0%</u> |

Two problems exist with the City's infrastructure: a significant amount of impairment and an apparent shortfall in the annual expenditures for capital maintenance. Each is described in the following sections.



IMPAIRMENT

Considerable impairment of the infrastructure exists. The primary problem is deterioration but there are additional problems that relate to safety, health, and working conditions. These problems affect the well-being of San Franciscans, the quality of City services, and the productivity of City employees.

The CIAC estimates that approximately \$1.2 billion is required to remedy the existing impairment of the City's infrastructure. A breakdown by category is shown below. Additional details are provided in Exhibit I.

| | <u>Dollars in Millions</u> | <u>Percent of Total</u> |
|---|--------------------------------|-----------------------------|
| Buildings and Structures (including piers, parks and runways) | \$734 | 63.2% |
| Water Pipes | 242 | 20.8 |
| Sewers, Sewer Plant and Sewer Equipment | 75 | 6.5 |
| Street, Bridges, and Traffic Equipment | 107 | 9.2 |
| Dams and Reservoirs | -- | -- |
| Equipment | <u>4</u> | <u>0.3</u> |
| Total | <u>\$1162</u> | <u>100.0%</u> |

Deterioration and the other problems are discussed in the sections that follow:

Deterioration

Deterioration is the reduction over time in the ability of the infrastructure components to perform their intended functions due to physical causes. The primary causes are aging, wear and tear, and structural fatigue. Other contributing causes include vandalism, exposure to elements, accidents and misuse.

The CIAC estimates that the cost of repairing the existing deterioration to the City's infrastructure is \$914 million. A breakdown by category is shown below. Additional details are provided in Exhibit I.

| | <u>Dollars in Millions</u> | <u>Percent of Total</u> |
|---|--------------------------------|-----------------------------|
| Buildings and Structures (including piers, parks and runways) | \$486 | 53.2% |
| Water Pipes | 242 | 26.5 |
| Sewers, Sewer Plant and Sewer Equipment | 75 | 8.2 |
| Street, Bridges, and Traffic Equipment | 107 | 11.7 |
| Dams and Reservoirs | -- | -- |
| Equipment | <u>4</u> | <u>0.4</u> |
| Total | <u>\$914</u> | <u>100.0%</u> |

San Francisco, the oldest city in the West, is paying the price of age. It has 245 miles of sewers (27% of the sewer system) that are over 93 years old. It also has 60 buildings (29% of the total square footage) that are between 50 and 80 years old. City Hall and Civic Auditorium, for instance, are 70

years old. Laguna Honda and the older sections of San Francisco General Hospital are over 66 years old.

Deterioration, of course, can and should be countered by maintenance, which requires adequate annual appropriations. Although appropriations in recent years have been very large, in the past they were often deferred. This former practice of deferred maintenance accounts for a large portion of the infrastructure deterioration that now exists.

This situation was exacerbated in 1978 by the passage of Proposition 13. Proposition 13 essentially eliminated the least expensive way to finance infrastructure maintenance, namely to increase property taxes to meet the cost of servicing new General Obligation bonds. At the same time, inflation rose to double digits, increasing maintenance costs.

Other Impairment Problems

The City's infrastructure is also impaired by seismic and asbestos exposure, fire safety problems, and inadequate working conditions. The CIAC estimates that the cost of remedying these problems is \$248 million. A breakdown by category is shown below:

| | <u>Dollars in Millions</u> | <u>Percent of Total</u> |
|--------------------|--------------------------------|-----------------------------|
| Seismic | \$190 | 76.6% |
| Asbestos | 17 | 6.9 |
| Fire safety | 25 | 10.1 |
| Working conditions | <u>16</u> | <u>6.4</u> |
| Total | <u>\$248</u> | <u>100.0%</u> |

Each of these problems is discussed separately below.

Seismic - Buildings constructed before the establishment of seismic safety regulations in 1948 may be vulnerable to damage during a strong earthquake. Approximately thirty percent of the City's buildings fall into this category.

The only City property for which a complete seismic study has been performed is Laguna Honda Hospital. The study shows that major seismic work needs to be done at a total cost of \$31 million. Without this work, a major earthquake could cause the building to become unusable (although the study says that it would not collapse).

We think that similar studies should be made immediately of all of the major City buildings constructed prior to 1948. Reasoning from the Laguna Honda situation, the CIAC estimates that the cost of seismic correction in all City buildings is \$190 million.

Asbestos - Asbestos, installed many years ago, is used in many of the City's buildings to insulate boilers and hot water pipes, and for acoustical treatment of interior work space. In the last few years, it has been determined that airborne asbestos fiber may pose a serious health hazard. Asbestos use was discontinued in 1975, but about 320 City buildings were built prior to that date. Preliminary estimates by Environmental Health inspectors indicate that approximately one-half of these buildings require remedial work. The CIAC estimates that the cost to make the necessary corrections is \$17 million.

Fire Safety - Many of the City's buildings do not meet essential fire safety requirements. These include the marking of fire escapes, secondary egresses, smoke alarms, widened doorways, sprinklers, and public address systems. The CIAC estimates that the cost of meeting these requirements is \$25 million.

Working Conditions - Many of the City's offices and shops are extremely difficult to work in. Space is inadequate, ventilation is poor, and the lighting is insufficient. Working conditions of this sort result in poor morale, high employee turnover, and a growing inability to attract and hire competent personnel. The CIAC estimates that \$16 million is needed to improve these conditions. Some examples follow:

- The County Clerk's Office and Municipal Court Clerks (Criminal Division) at the Hall of Justice. Overcrowding results in the lack of sufficient windows to serve the public. The windows that do exist are adjacent to loud corridors. The absence of storage facilities forces inefficient response to the public's requests for information.
- The Bureau of Building Inspection at 450 McAllister. Severe overcrowding causes considerable noise. Both the building inspectors and the public, including contractors at the public counter attempting to concentrate on construction plans, are adversely affected by the resultant noise and confusion.

- The City Attorney's Office in City Hall. There is intense overcrowding leading to inefficiency and an unprofessional environment. City attorneys currently work from two to four to an office. Such critical legal functions as attorney-client conferences or the taking of depositions are difficult, and sometimes impossible to accomplish. The absence of storage space necessitates the maintaining of files in hallway crates, with consequent inaccessibility.

- Electronic Data Processing at 240 Van Ness. Due to poor ventilation and overcrowding, the environment is noisy, uncomfortable, and inefficient to work in. In addition, employees are currently scattered among seven locations, leading to both increased costs for leased space and lost productivity due to the difficulty of coordinating information.

FINANCING METHODS

The City needs to spend \$1.162 billion to correct the existing impairment. We have reviewed the question of how to finance this large amount of work, being aware that the City's revenues are shrinking and that the City faces future fiscal uncertainty. Our goal was to find financing mechanisms that fit logically with the work that needs to be done, and that do not affect the present revenue stream but rather provide additional sources of revenue.

We therefore recommend three financing programs for your consideration, as follows:

1. General Obligation bonds for resolving health and safety matters in departments without access to user fees -- provided Proposition 13 is amended in the June 1986 election.
2. A combination of business and sales tax increases for other repairs in these same departments.
3. User fee increases for departments and bureaus that can impose them.

Priorities - The CIAC believes that priorities are essential, both because of the magnitude of the work to be done and the limited sources of funds. We suggest that project priorities should be based upon health and safety considerations; the degree of threat to the structural integrity of the asset; and the size, complexity, and lead times of the required effort. We further suggest that work should be programmed over 18 years in order to keep the annual financial requirements manageable.

For example, we recommend that asbestos abatement and the fire safety improvements be done over the next five years; that seismic modifications be scheduled over 10 years with the most critical work (representing two-thirds of the effort) completed in first five years; and that repairs to high pressure fire mains be scheduled over 15 years with the most urgent work completed in the first two years.

We have developed for your approval an overall Infrastructure Maintenance Program for remedying the existing infrastructure impairment. That Program is summarized below with additional details provided in Exhibit II. Examples of high priority projects are listed in Exhibit III.

| | <u>Dollars in Millions</u> | <u>Percent of Total</u> |
|--------------------------|--------------------------------|-----------------------------|
| General Obligation Bonds | \$ 327 | 28.1% |
| Business and Sales Taxes | 418 | 36.0 |
| User Fees | <u>417</u> | <u>35.9</u> |
| Total | <u>\$1162</u> | <u>100.0%</u> |

Each of the financing programs is discussed separately in the sections that follow:

General Obligation Bonds - The cost of repairing impairments affecting health and safety is estimated at \$327 million in departments without access to user fees. A breakdown by category is shown below:

| | <u>Dollars in Millions</u> | <u>Percent of Total</u> |
|--------------------------|--------------------------------|-----------------------------|
| Seismic | \$190 | 58.1% |
| Asbestos | 17 | 5.2 |
| High Pressure Mains | 95 | 29.1 |
| Fire Safety Requirements | <u>25</u> | <u>7.6</u> |
| Total | <u>\$327</u> | <u>100.0%</u> |

We recommend the use of General Obligation bonds to finance these repairs. General Obligation bonds are the least expensive financing method available. Although San Francisco has historically issued relatively few General Obligation bonds, this method has been the traditional way to finance infrastructure maintenance in this country. The passage of Proposition 13 in 1978 effectively curtailed the use of these bonds in California by restricting increases in property tax to provide for debt service. A state constitutional amendment to Proposition 13 will be on the ballot in June of 1986. If passed, this amendment would allow property tax increases for General Obligation bonds that are used for infrastructure purposes.

Under our proposal, General Obligation bonds (with 20-year terms) would be sold in three issues, five years apart. A two-thirds vote would be required in San Francisco for this purpose. The resultant increase in the average property tax bill for each single family homeowner would be \$52 in the first year, \$24 in the sixth year, and \$7 in the eleventh year.

If the amendment to Proposition 13 fails to pass, we recommend the use of Sales Tax Revenue bonds backed by a 0.5 cent increase in the sales tax (from 6.5 cents to 7.0 cents). Approval by the Legislature and a two-thirds vote in San Francisco would be required for this purpose. These bonds would be sold in three issues (with 30-year terms) in the same manner as contemplated for the General Obligation bonds. They would be dedicated to infrastructure maintenance.

The State of Illinois recently used this type of financing for \$1.3 billion worth of infrastructure work. At 7 cents, San Francisco would be at the same level as San Jose and would still be below New York City (at 8.25 cents) and Chicago (at 7.25 cents).

Business and Sales Taxes - The cost of the remaining impairments in departments without access to user fees is estimated at \$418 million. A breakdown by category is shown below:

| | <u>Dollars in Millions</u> | <u>Percent of Total</u> |
|--|--------------------------------|-----------------------------|
| City Buildings: | | |
| Deterioration | \$284 | 67.9% |
| Working conditions | <u>16</u> | <u>3.8</u> |
| Subtotal | \$300 | 71.7% |
| Streets, Bridges, and Traffic Equipment | 107 | 25.6 |
| Recreation and Parks | 7 | 1.7 |
| Equipment | <u>4</u> | <u>1.0</u> |
| Total | <u>\$418</u> | <u>100.0%</u> |

We recommend that these repairs be financed on a 50:50 basis by increases in the business taxes and sales tax. (This recommendation assumes that the amendment to Proposition 13 passes in June 1986. If it does not, then the mix of financing methods would have to be restudied.)

Business Taxes: Specifically, we recommend an increase in the Payroll Tax from 1.5% to 1.7% and an increase in the average Gross Receipts Tax of \$0.27 per thousand (from \$2.00 to \$2.27) to finance these repairs. Revenue from these tax increases would be dedicated to infrastructure maintenance. A two-thirds vote would be required in San Francisco for this purpose.

Sales Tax: We recommend the use of Sales Tax Revenue bonds backed by a 0.25 cent increase in the sales tax (from 6.50 cents to 6.75 cents). This revenue would also be dedicated to infrastructure maintenance. Approval of the Legislature and a two-thirds vote in San Francisco would be required for this purpose.

User Fees - The departments or bureaus with access to user fees are Water, Port, Sewers, Convention Facilities, Airport, and Hetch Hetchy. The cost of remedying impairments in these departments and bureaus is estimated at \$417 million. A breakdown by category is shown below:

| | <u>Dollars in Millions</u> | <u>Percent of Total</u> |
|-----------------------|--------------------------------|-----------------------------|
| Port | \$200 | 48.0% |
| Water | 140 | 33.6 |
| Sewers | 75 | 18.0 |
| Convention Facilities | 2 | 0.4 |
| Airport | -- | -- |
| Hetch Hetchy | -- | -- |
| Total | <u>\$417</u> | <u>100.0%</u> |

We recommend that revenue bonds backed by increased user fees be used for this purpose as follows:

- Finance repairs to piers with Port rental and maritime fees at the rate of \$20 million per year. This recommendation is based on the assumption that these repairs are justified by the continued growth of maritime activities at the Port.
- Finance repairs to water pipes with water revenue bonds at the rate of \$7.8 million per year. The increase in cost to the average user would be approximately \$1.62 bimonthly (\$9.72 annually) in years 1, 7, and 13.
- Finance repairs to sewers with sewer revenue bonds at the rate of \$5 million per year. The increase in cost to the average user would be approximately \$0.61 bimonthly (\$3.66 annually) in years 1, 6, and 11.
- Finance the required \$2 million in repairs to the Convention Facilities with hotel tax revenues. No increase would be required.

ANNUAL MAINTENANCE

In recent years, the City has spent heavily on infrastructure maintenance. During the six-year period from 1978-79 through 1983-84, the City spent an average of \$155 million per year - \$930 million - on infrastructure repairs (1985 dollars), the highest spending rate in our history.

However, we estimate that the City needs to reinvest about \$205 million (1985 dollars) annually in maintenance in order to keep up with normal deterioration. This amount is \$50 million above the average expenditure level of the last 6 years.

Two different methods were used to develop this estimate. Both are based on judgments rather than on engineering valuations. In the first method, the replacement values and useful lives were estimated for each category of the City's assets. Annual maintenance requirements were then calculated on a straight line basis. Details are shown in Exhibit I. In the second method, each department head developed independent estimates of the amount of money needed by his/her department to keep up with normal deterioration. The resulting estimates of annual capital maintenance were \$201 million and \$207 million, respectively.

Any shortfall in the expenditures required to keep up with normal deterioration produces deferred maintenance. Deferred maintenance can be expensive when it results in repairs on an emergency basis. All too often that is what happens. For example:

- The annual cost of maintaining Laguna Honda Hospital's laundry room washers, dryers and valves is normally about \$25,000. Because this maintenance was deferred total replacement of the machinery was needed at a cost of \$1 million.
- A recent water main break near Embarcadero One necessitated the emergency replacement of 20 feet of main at a cost of \$50,000 and the interruption of water service for one full day. Had this repair been accomplished on a scheduled basis, the routine cost would have been \$4,000 without any loss of service.
- When a piece of granite ballustre near the City Hall dome broke off and fell through the skylights on the building's north side, the total cost for repairing the skylights, ceilings and ballustre on an emergency basis was \$500,000. Had the ballustres been routinely re-jointed, the cost would have been \$30,000.

The problem is that we have \$15.4 billion worth of assets, many of which are old and becoming increasingly costly to maintain.

In 1987 the City will receive an engineering valuation of the exact amount of annual maintenance needed. We recommend continuing our existing level of expenditure until then and increasing it upon receipt of the valuation.

EXHIBIT I

DETAILED INFRASTRUCTURE DATA

| <u>Category</u> | <u>Replacement Value (in Billions)</u> | <u>Annual Required Maintenance (in Millions)</u> | <u>Impairment (in Millions)</u> |
|---|--|--|-------------------------------------|
| 1. BUILDINGS AND STRUCTURES | | | |
| City Buildings: | \$1.65 | \$16.5 | \$284.3 |
| Seismic Modifications | -- | -- | 190.0 |
| Asbestos Abatement | -- | -- | 17.0 |
| Working Conditions | -- | -- | 16.0 |
| Fire Safety | | | 25.0 |
| Subtotal - City Buildings | \$1.65 | \$16.5 | \$532.3 |
| Convention Facilities | 0.20 | 2.0 | 2.0 |
| Airport Terminals | 0.60 | 10.0 | 0.0 |
| Airport Runways | 0.30 | 15.0 | 0.0 |
| Water Dept. Structures | 0.30 | 2.0 | 0.0 |
| Hetch Hetchy Buildings | 0.06 | 1.2 | 0.0 |
| Recreation/Park Grounds | 0.05 | 12.0 | 0.0 |
| Port Piers | <u>1.00</u> | <u>8.3</u> | <u>200.0</u> |
| Total - Buildings and Structures | <u>\$4.16</u> | <u>\$67.0</u> | <u>\$734.3</u> |
| 2. WATER PIPES | | | |
| Hetch Hetchy | \$1.00 | \$ 8.0 | \$ 0.0 |
| Water Dept. - SF | 1.70 | 13.6 | 140.0 |
| Water Dept. - Peninsula | 1.00 | 8.0 | 0.0 |
| High Pressure Mains | 0.19 | 1.9 | 95.0 |
| Recreation/Parks | <u>0.03</u> | <u>1.3</u> | <u>7.0</u> |
| Total - Water Pipes | <u>\$3.92</u> | <u>\$32.8</u> | <u>\$242.0</u> |
| 3. SEWERS, SEWER PLANT AND SEWER EQUIPMENT | | | |
| New Sewers | \$0.55 | \$ 3.1 | \$ 0.0 |
| New Sewer Plants | 0.15 | 1.0 | 0.0 |
| New Sewer Equipment | <u>0.05</u> | <u>2.0</u> | <u>0.0</u> |
| Subtotal - New Sewers | <u>\$0.75</u> | <u>\$ 6.1</u> | <u>\$ 0.0</u> |
| Old Sewers | \$2.75 | \$15.7 | \$75.0 |
| Old Sewer Plants | 0.05 | 0.3 | incl. |
| Old Sewer Equipment | <u>0.02</u> | <u>0.8</u> | <u>incl.</u> |
| Subtotal - Old Sewers | <u>\$2.82</u> | <u>\$16.8</u> | <u>\$75.0</u> |
| Total - All Sewers | <u>\$3.57</u> | <u>\$22.9</u> | <u>\$75.0</u> |

DETAILED INFRASTRUCTURE DATA

| <u>Category</u> | <u>Replacement Value (in Billions)</u> | <u>Annual Required Maintenance (in Millions)</u> | <u>Impairment (in Millions)</u> |
|---|--|--|-------------------------------------|
| 4. STREETS, BRIDGES, AND TRAFFIC EQUIPMENT | | | |
| Streets and Bridges | \$1.72 | \$ 17.7 | \$ 65.0 |
| Traffic Signals | 0.06 | 2.3 | 40.0 |
| Traffic Signs | 0.01 | 1.2 | 2.0 |
| Total - Streets and Bridges | <u>\$1.79</u> | <u>\$21.2</u> | <u>\$107.0</u> |
| 5. DAMS AND RESERVOIRS | | | |
| Hetch Hetchy | \$0.70 | \$ 2.8 | \$ 0.0 |
| Water Department | 0.40 | 1.8 | 0.0 |
| Total - Dams and Reservoirs | <u>\$1.10</u> | <u>\$ 4.6</u> | <u>\$ 0.0</u> |
| 6. EQUIPMENT | | | |
| Hetch Hetchy Electrical | \$0.30 | \$10.0 | \$ 0.0 |
| Muni Rolling Stock | 0.36 | 30.0 | 0.0 |
| All Other Equipment | 0.16 | 13.3 | 4.0 |
| Total - Equipment | <u>\$0.82</u> | <u>\$53.3</u> | <u>\$ 4.0</u> |
| TOTAL ALL CATEGORIES | <u>\$15.36</u> | <u>\$201.8</u> | <u>\$1,162.3</u> |

EXHIBIT II
INFRASTRUCTURE MAINTENANCE PROGRAM

| FINANCING CATEGORY | | | | | | | | | | | | | | | | | | Total Impairment |
|-----------------------------------|----------------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1. Safety & Health Repairs | | | | | | | | | | | | | | | | | | |
| Seismic Modifications | \$25.5 | \$25.5 | \$25.5 | \$25.5 | \$25.5 | \$12.5 | \$12.5 | \$12.5 | \$12.5 | \$12.5 | | | | | | | | \$130 |
| Asbestos Abatement | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | | | | | | | | | | | | | 17 |
| High Pressure Pumps | 9.5 | 9.5 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | 5.8 | | | | | | | | 96 |
| Fire Safety | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | | | | | | | | | | | | | 26 |
| Subtotal - Safety & Health | <u>\$43.4</u> | <u>\$43.4</u> | <u>\$39.7</u> | <u>\$39.7</u> | <u>\$39.7</u> | <u>\$18.3</u> | <u>\$18.3</u> | <u>\$18.3</u> | <u>\$18.3</u> | <u>\$18.3</u> | <u>\$5.8</u> | <u>\$5.8</u> | <u>\$5.8</u> | <u>\$5.8</u> | <u>\$5.8</u> | <u>\$0.0</u> | <u>\$0.0</u> | <u>\$327</u> |
| 2. Building & Street Repairs | | | | | | | | | | | | | | | | | | |
| City Buildings | | | | | | | | | | | | | | | | | | |
| Deterioration | \$19.0 | \$19.0 | \$19.0 | \$19.0 | \$19.0 | \$19.0 | \$19.0 | \$19.0 | \$19.0 | \$19.0 | | | | | | | | \$294 |
| Working Conditions | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | | | | | | | | | | | | | 16 |
| Streets/Bridges/Traffic Equipment | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | | | | | | | | 107 |
| Recreation & Park Pipes | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | | | | | | | | 7 |
| Equipment | 1.3 | 1.3 | 1.3 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 4 |
| Subtotal - Buildings & Streets | <u>\$31.3</u> | <u>\$31.3</u> | <u>\$31.3</u> | <u>\$30.0</u> | <u>\$30.0</u> | <u>\$26.8</u> | <u>\$26.8</u> | <u>\$26.8</u> | <u>\$26.8</u> | <u>\$26.8</u> | <u>\$26.1</u> | <u>\$26.1</u> | <u>\$26.1</u> | <u>\$26.1</u> | <u>\$26.1</u> | <u>\$0.0</u> | <u>\$0.0</u> | <u>\$418</u> |
| 3. Revenue Group Repairs | | | | | | | | | | | | | | | | | | |
| Water Pipes | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$7.8 | \$140 |
| Sewers | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | | | | | | | | 75 |
| Port Piers | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | | | | | | | 200 |
| Convention Facilities | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | | | | | | | | | | | | | 2 |
| Subtotal - Revenue Group | <u>\$33.2</u> | <u>\$33.2</u> | <u>\$33.2</u> | <u>\$33.2</u> | <u>\$32.8</u> | <u>\$32.8</u> | <u>\$32.8</u> | <u>\$32.8</u> | <u>\$32.8</u> | <u>\$32.8</u> | <u>\$12.8</u> | <u>\$12.8</u> | <u>\$12.8</u> | <u>\$12.8</u> | <u>\$12.8</u> | <u>\$7.8</u> | <u>\$7.8</u> | <u>\$417</u> |
| Total | <u>\$107.9</u> | <u>\$107.9</u> | <u>\$104.2</u> | <u>\$102.9</u> | <u>\$102.9</u> | <u>\$77.9</u> | <u>\$77.9</u> | <u>\$77.9</u> | <u>\$77.9</u> | <u>\$77.9</u> | <u>\$44.7</u> | <u>\$44.7</u> | <u>\$44.7</u> | <u>\$44.7</u> | <u>\$44.7</u> | <u>\$7.8</u> | <u>\$7.8</u> | <u>\$1,162</u> |
| SUMMARY | | | | | | | | | | | | | | | | | | |
| 1. Safety & Health Repairs | \$43.4 | \$43.4 | \$39.7 | \$39.7 | \$39.7 | \$18.3 | \$18.3 | \$18.3 | \$18.3 | \$18.3 | \$5.8 | \$5.8 | \$5.8 | \$5.8 | \$5.8 | \$0.0 | \$0.0 | \$327 |
| 2. Building & Street Repairs | 31.3 | 31.3 | 31.3 | 30.0 | 30.0 | 26.8 | 26.8 | 26.8 | 26.8 | 26.8 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 0.0 | 0.0 | 418 |
| 3. Revenue Group Repairs | 33.2 | 33.2 | 33.2 | 33.2 | 33.2 | 32.8 | 32.8 | 32.8 | 32.8 | 32.8 | 12.8 | 12.8 | 12.8 | 12.8 | 12.8 | 7.8 | 7.8 | 417 |
| Total | <u>\$107.9</u> | <u>\$107.9</u> | <u>\$104.2</u> | <u>\$102.9</u> | <u>\$102.9</u> | <u>\$77.9</u> | <u>\$77.9</u> | <u>\$77.9</u> | <u>\$77.9</u> | <u>\$77.9</u> | <u>\$44.7</u> | <u>\$44.7</u> | <u>\$44.7</u> | <u>\$44.7</u> | <u>\$44.7</u> | <u>\$7.8</u> | <u>\$7.8</u> | <u>\$1,162</u> |

EXHIBIT III

EXAMPLES OF HIGH PRIORITY PROJECTS

- Remove loose fixtures at Laguna Honda Hospital
- Perform a seismic survey of all pre-1948 structures
- Perform an asbestos survey of all pre-1975 structures
- Make major seismic corrections at Laguna Honda Hospital
- Remove seismic and asbestos exposures found to exist
- Perform condition assessment of City buildings
- Replace or repair heavily deteriorated Fire Department high pressure mains
- Remove advanced deterioration in buildings (for example, San Bruno Jail)
- Remove advanced deterioration in water pipes (for example, 8-inch mains on Battery from Bush to Pacific)
- Replace functionally obsolete Northern Police Station
- Remove advanced deterioration in sewers (for example, Guerrero Street from 18th Street to 28th Street)
- Repair Pier Nos. 30, 32, 70 and 80
- Remove advanced deterioration in streets (for example, Townsend)

MEMBERS, CAPITAL IMPROVEMENT ADVISORY COMMITTEE

Donald Birrer, Director of Public Works
 Mary Burns, General Manager, Recreation and Parks Department
 John Farrell, Controller
 Dean Macris, Director of Planning
 Rudolf Nothenberg, General Manager of Utilities

Roger Boas, Chief Administrative Officer and Chairperson

PERSONNEL WHO ASSISTED THE CIAC
IN THE PREPARATION OF THE REPORT

Data Review and Evaluation:

| | |
|-----------------|------------------------------|
| Frank Moss | City Engineer |
| Norman Karasick | City Architect |
| Wallace Wortman | Director of Property |
| Calvin Malone | Capital Projects Coordinator |

Research, Analysis, Editing:

| | |
|---------------------|----------------------------------|
| Robert Gamble | Executive Assistant, CAO |
| John Cribbs | Principal Engineer |
| Jack Moerschbaecher | Convention Facilities Department |
| Fred Weiner | Convention Facilities Department |
| Ara Minasian | Analyst, CAO |
| Kary Schulman | Administrator, Hotel Tax Fund |
| Joan Lubamersky | Analyst, CAO |
| James M. Edgar | Edgar, Dunn & Company Inc. |
| James Hudak | Arthur Anderson Co. |
| Jane Cloninger | Edgar, Dunn & Company Inc. |
| Robert Kenealey | Deputy City Attorney |
| Shauna Rose | CAO Office |

Resource Personnel:

| | |
|--------------------|--|
| Chris Baldo | Controller's Office; CAMS |
| Dennis Bouey | Deputy Director, Facilities, Operations and Maintenance, San Francisco Airport |
| Ann Branstom | Deputy General Manager, Muni Railway |
| Ted Chung | Deputy General Manager, Hetch Hetchy Water and Power |
| Terrence Comerford | Blythe Eastman Dillon |
| James Cooney | Manager, City Distribution Division Water Department |
| Duke Edwards | Superintendent of Harbor Maintenance, Port Commission |
| Robert Feyer | Orrick, Herrington & Sutcliffe |

PERSONNEL WHO ASSISTED THE CIAC
IN THE PREPARATION OF THE REPORT

Resource Personnel: (continued)

| | |
|------------------|--|
| Mary Fitzpatrick | Controller's Office; CAMS |
| David Fong | Controller's Office |
| Ed Gerber | Legislative Representative |
| John Guthrie | Assistant Controller and Director of CAMS |
| Ed Herrington | Supervising Fiscal Officer, PUC - Finance Bureau |
| Dale Horwitz | Salomon Bros., NYC |
| Cliff Jarrard | Administrative Engineer, Port Commission |
| Art Jensen | Water Department |
| Vello Kiisk | Chief Harbor Engineer, Port Commission |
| Jim Lucey | Assistant Superintendent of Parks, Structural Maintenance, Recreation and Parks Department |
| John Madden | Controller's Office |
| Anson Moran | Assistant General Manager, Finance, PUC |
| Davis Schwartz | Deloitte, Haskins & Sells; CAMS |
| Bruce Shafer | Assistant Assessor |
| Alan Simpson | Central Automotive Shops |
| Rich Sullivan | Assistant Tax Collector |
| Frank Tatum, Jr. | Mayor's Fiscal Advisory Committee |
| Vitaly Troyan | Chief, Bureau of Engineering, Public Works Department |
| Jason Yuen | Administrator, Bureau of Planning and Construction, San Francisco Airport |

Deterioration Validation:

| | |
|---------------------|-----------------------------|
| Ben Cole | Chevron |
| Jose Gomez | Embarcadero Center |
| Jerry Maxwell | Embarcadero Center |
| Carl A. Scholz | Skidmore, Owings & Merrill |
| Carl H. Jordan | Skidmore, Owings & Merrill |
| Michael H. O'Malley | Skidmore, Owings & Merrill |
| Rick Beall | Skidmore, Owings & Merrill |
| Peter Geraghty | Skidmore, Owings & Merrill |
| Easdon K. Smith | Dinwiddie Construction Co. |
| Rick Leicher | Dinwiddie Construction Co. |
| Al Hook | Dinwiddie Construction Co. |
| Patrick J. Creegan | Parsons Engineering |
| Luciano Meiorin | Parsons Engineering |
| Robert G. Caughey | De Leuw Cather |
| Jeanne MacLeamy | Hellmuth, Obata & Kassabaum |
| James Henrekin | Hellmuth, Obata & Kassabaum |

Seismic Vulnerability:

| | |
|-----------|-------------------------|
| Ed Zacker | H. J. Brunnier & Assoc. |
|-----------|-------------------------|

